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AUTHORITY

SMUFD d/a ltr, 8 Feb 1972

TRANSLATION NO. 885

DATE: Sept. 1963

DEPARTMENT OF THE ARMY
Fort Detrick
Frederick, Maryland

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AGRICULTURAL POISONS IN FOODSTUFFS CAN BE COMBATTED WITH MICROBES

/Following is a translation of an article signed "Pass" in Dagens Nyheter (News of the Day), Stockholm, 1 August 1963, page A-5./

The current large-scale poisoning nature by agriculture and forestry through chemical pesticides can probably be counteracted with microbes. This idea and hope were expressed on Wednesday by a number of researchers at the world microbiological congress at Stockholm.

Such preparations as DDT have entered foodstuffs along with the crops and have received the blame for cases of cancer in children, among other matters.

By way of insects, agricultural poisons have affected birds, which have been poisoned.

These are all familiar matters after last year's debate over Carson's book "Silent Spring."

What is new in the situation is, according to Wednesday's scientific discussions in Stockholm, the fact that it is believed microbes can be produced which will render the poisons harmless. Primary responsibility is laid upon agriculturists, but microbiologists are prepared to help. ( )

DDT Is Long-Lived

In the expert group which dealt with problems on improving the soil with the help of microbes Dr. M. Alexander of Cornell University in the United States took up this problem in particular.

He showed that DDT, for example, persists for more than three years, lead arsenate and parathionol for more than five, HHC and Chlordane for more than 11. They are all chemical preparations commonly

used in agriculture. The figures have been secured from field investigations and not from laboratory tests.

"Molecular architecture plays a large part in the determination of molecular possibilities," said Dr. Alexander. In this connection he believed that the preparation could frequently be made "appetising" for microbes through small modifications in chemical structure. They will thus be able to render the substances harmless when these have fulfilled their designed function of improving harvests.

While another group of specialists commenced to deal with the question of how one may be able, through the use of computers, to grasp the material in the field of microbiology which is expanding far too fast for human brains, a further group concentrated upon questions as to how one is to synthetise essential amino-acids.

Help Nature Sweeten Meals Faster

This took place under the chairmanship of Dr. L. E. Ericson, a Swedish agronomy scientist who works with the International Atomic Energy Agency in Vienna. He summarised the problem posed as follows:

Nature's production of protein via eggs, milk, meat, etc., takes place too slowly and with too low a degree of efficiency, when one thinks of the population explosion's requirement for rapidly augmented access to foodstuffs. For this reason we shall have to seek to enrich vegetable protein into such products of higher value. For six years various investigations have been under way as regards this problem, in Sweden as well as elsewhere.

Three methods are possible: (1) mix different vegetables. It is better (2) to add a little animal protein to the vegetable base. Even better is (3) to add the amino-acids which are secured in free form.

The last method has already been tested with success both on animals and on human beings, Dr. Ericson added. The amino-acids can be produced industrially, for example through microbial methods. So here one has a cheap source for high-value (enriched) protein. The method has the advantage of not changing the taste, color, cooking properties, etc., of the foodstuff one chooses for enrichment in this fashion.

"The foodstuffs industry ought to be fully capable of adding the right amino-acids in the correct quantities," he added, referring to the already accomplished vitamin enrichment. "But a break-through for this technique would have to come first of all in the highly developed countries. We can't come to the underdeveloped countries with a white powder and say, 'mix this in your food and you will get an adequate diet' if they find out that we don't use the procedure ourselves."

Alarming and warning communications also came from Wednesday's main procedures, regarding a certain optimism as to the possibility of producing food for a population doubling in a couple of decades. These proceedings were devoted to applied immunology, i.e., the combatting of disease among human beings, animals, and plants.

Disturbing Military Experimentation

According to Dr. Leroy D. Fothergill military researchers in the United States have carried out experiments with the diffusion of very fine dust particles. It turns out that these can be bearers of disease in a new and unexpected way.

The military experiments shows that particles which are only thousandths of a millimeter in diameter can be diffused very great distances and over very large surfaces. When they are less than 1/100 of a millimeter they can get into the lungs. All living beings come into contact with such infectious clouds.

A number of surprising cases of such occurrences have taken place. He described cases where rabies have been diffused by bats, or accidents have struck laboratories. A sugar factory in Austria got a mouse infection via the washing vapors from sugar beets, etc. In such cases one must study the surroundings and the atmosphere very precisely.

Briefly: impure air, not least from factories, can give rise to new and unusual disease situations.

One has every reason to hope that the military possibilities of disseminating infection deliberately through disease clouds will never be availed of against human beings, even if one military man or another regards bacteriological warfare as a potentially more potent weapons development than even the atomic bomb. The chairman of the principal session, the Uppsala professor and bacteriologist Gunnar Lofstrom, expressed the pious hope that this application would be foregone.

Somewhat happier strains were sounded in the afternoon when the technical improvements which are being introduced or are conceivable in the field of applied immunology were gone over. Dr. D. T. Roman of the University of Wisconsin, U.S.A., pointed out the great need for preventive immunization of domestic animals.

The chairman of the session, Dr. J. Ungar from England, pointed out that there are tropical countries where over half of the crops which are intended for feeding cattle are "used" so that it fattens worms and other parasites which harm the animals. Here drastic measures are required, with immunisation among other matters. "Immunisation calls for just as much attention as does the production of food."

In this connection vaccines for human beings were brought up. Dr. Ir. P. A. van Hemert, Utrecht, spoke about the fact that only 20 percent of the earth's inhabitants have been vaccinated as yet. This is particularly important with such diseases as yellow fever in mind.

He presented a standardized method which can lay the foundations for all sorts of vaccine production. This is a technique which can save time and work in the underdeveloped countries, not least when one now has occasion to shift from laboratory production of vaccines to industrial production in order to raise effectiveness.

In the ensuing debate there was advanced the proposal that combatting malaria should be taken up for renewed consideration as the technique is improved. The question was raised whether active immunization is not the best method, even though one which has never to date been conscientiously applied.

/Caption to photographs at head of article: Among the speakers at the Microbiology congress on Wednesday there were noted (above, left to right) Dr. D. T. Berman, U.S.; Dr. Stuart Mudd, U.S.; Dr. Ir. P. A. van Hemert, Utrecht; and (lower row, from left) Dr. W. Chas. Cockburn, Geneva; Dr. L. E. Ericson, Sweden; and Dr. Leroy Fothergill, U.S./

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CSO: R-3424-D